

What Is Claimed Is:

1. A circuit configuration for operating a gas sensor (10) including a reference gas space (18) in which a reference electrode (19) is situated, having a current source (36) which supplies a reference pump current (35) to the reference electrode (19), wherein a diagnostic system (39, 43, 44) is provided, including a timer (43); the diagnostic system (39, 43, 44) delivers a current selection signal (45) to the current source (36) for setting the reference pump current (35) during diagnostic operation of the gas sensor (10); the diagnostic system (39, 43, 44) delivers a switch signal (46) to the timer (43) for starting the timer (43) and the diagnostic system (39, 43, 44) evaluates a sensor signal (38) of the gas sensor (10) during diagnostic operation based on time.
2. The circuit configuration as recited in Claim 1, wherein the diagnostic system (39, 43, 44) evaluates the rate of change of the sensor signal (38).
3. The circuit configuration as recited in Claim 1 or 2, wherein the diagnostic system (39, 43, 44) includes a comparator (39) which compares the sensor signal (38) with a threshold value (40) and supplies a diagnostic signal (42) as a function of the comparison result.
4. The circuit configuration as recited in Claim 3, wherein the diagnostic signal (42) stops the timer (43).
5. The circuit configuration as recited in Claim 4, wherein the timer (43) supplies an end signal (47) which represents the time elapsed; and the current selection signal (45) is set as a function of the end signal (47) for operating the gas sensor (10) outside of diagnostic operation.
6. The circuit configuration as recited in Claim 5, wherein the time determinable by the timer (43) is set at a maximum time.

7. The circuit configuration as recited in one of the preceding claims, wherein the current selection signal (45) shuts down the current source (36) or triggers it to supply a negative reference pump current (35).

8. The circuit configuration as recited in one of the preceding claims, wherein the reference electrode (19) is permanently connected to a predefined potential across a resistor (26) and a discharge current (27) flowing across the resistor (26) pumps out the reference gas.

9. The circuit configuration as recited in one of Claims 4 through 8, wherein the gas sensor (10) is a lambda sensor and the reference gas space (18) contains oxygen as the reference gas.

10. The circuit configuration as recited in Claim 9, wherein the lambda sensor is situated in an exhaust gas system of an internal combustion engine and an enable signal (48) triggers the diagnosis after shutdown of the internal combustion engine.